Universitat Autònoma de Barcelona

2022/2023

Human Nutrition

Code: 103268
ECTS Credits: 6

Degree	Type	Year	Semester
2501925 Food Science and Technology	OB	2	2

Contact

Name: José Juan Rodriguez Jerez
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Use of Languages

Principal working language: spanish (spa)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Teachers

Mireia Porta Oliva
Carolina Ripollés Àvila

Prerequisites

Knowledge in physiology, biochemistry and nutritional products.

Objectives and Contextualisation

1.- Describe the fundamental concepts, the historical foundations and the bibliographic bases of human nutrition.

2.- Show that you know the physiological and biochemical bases of the metabolism of the different nutritional substances and the nutritional needs and recommendations.

3.- Identify the different systems for assessing the nutritional status of the population and the factors

4.- Interpret the nutritional composition of foods and their role in the health of individuals.

5.- Identify the recommended dietary guidelines in healthy individuals, at different stages of life, in different physiological situations and pathologies with the most frequent nutritional implications.

6.- To study the nutritional characteristics of the nutritional products destined to specific groups of individuals.

7.- Analyze the effects and influence of food technology on the nutritional value of foods.

Competences

- Analyse, summarise, resolve problems and make professional decisions.
- Apply the scientific method to resolving problems.
- Design experiments and interpret the results.
- Design, formulate and label foods that fit in with the needs of consumers and their cultural traits.

- Display knowledge of nutrients, of their bioavailability and function in the organism, and the bases of nutritional balance.
- Display knowledge of nutritional needs and the fundamental principles governing relationships between food and health.
- Search for, manage and interpret information from different sources.
- Use IT resources for communication, the search for information within the field of study, data processing and calculations.

Learning Outcomes

1. Analyse, summarise, resolve problems and make professional decisions.
2. Apply the scientific method to resolving problems.
3. Design experiments and interpret the results.
4. Discern the anthropometric, physiological and biochemical measures that are of interest in human nutrition.
5. Enumerate nutritional needs.
6. Explain the basic principles of human nutrition.
7. Explain the relationship between nutrition and health.
8. Identify and interpret the diversity of foods and its influence on human nutrition.
9. Identify the national and international bodies that define them and how to obtain up-to-date information.
10. Interpret data from studies on human nutrition.
11. Interpret nutrition tables, both on paper and using computer programmes.
12. Interpret the metabolism of energetic nutrients.
13. Interpret the metabolism of non-energetic nutrients.
14. Interpret the nutritional needs and recommendations of the population at different stages in life.
15. Present the effects of antinutritional substances on human nutrition.
16. Provide a basis for evaluation of nutritional needs in humans.
17. Search for, manage and interpret information from different sources.
18. State health indicators.
19. Use IT resources for communication, the search for information within the field of study, data processing and calculations.

Content

UNIT 1.- INTRODUCTION. Basics Bibliography.

UNIT 2.- PHYSIOLOGY OF NUTRITION. Physiological and biochemical bases. Digestion and absorption. Hormonal regulation Metabolic processes.

UNIT 3.- ENERGY. Physiological utility Energy content of food. Direct and indirect calorimetry. Energy needs of the human body. Techniques of determination. Repercussions on health.

UNIT 4.- WATER AND ELECTRONICS. Concept Physiological utility Nutritional characteristics. Repercussions on health.

UNIT 5.- MINERALS. Physiological utility Nutritional characteristics. Mineral metabolism and regulation.

UNIT 6.- VITAMINS. Physiological utility Nutritional characteristics. Repercussions on health. Metabolism and regulation.

UNIT 7.- CARBON HYDRATES. Digestion and metabolism. Needs and recommendations. Fiber diet. Characteristics. Beneficial and harmful effects. nutritional needs inhibitors of digestion of starches.

UNIT 8.- PROTEINS. Quality of proteins. Needs of amino acids and proteins. Protein metabolism. Recommendations.

UNIT 9.- LIPIDS. Nutrition functions and fat metabolism. Cholesterol

UNIT 10.- ALCOHOL. Metabolism Repercussions on health. Calorie alcohol input.

UNIT 11.- NUTRITIVE AND ANTINUTRITIVE SUBSTANCES. Activity and repercussions for health.

UNIT 12.- EVALUATION OF THE NUTRITIONAL STATE. Epidemiological analysis of nutritional studies. health indicators Anthropometric measurements and biochemical and clinical determinations.

UNIT 13.- FOOD CONDUCT. Cultural and emotional value of food. Factors that condition the feeding.

UNIT 14.- FOOD GROUPS. Nutritional and consumption characteristics of different foods. More important considerations in applied nutrition.

UNIT 15.- NUTRITIONAL RECOMMENDATIONS. Review of criteria on nutrition requirements and recommendations. Food policies. Nutrition goals for the Spanish population. Food guides Health plan Food surveys

UNIT 16.- FOOD COMPOSITION TABLES. Concepts: food, nutrient, gross weight, net weight, crude weight, weight cooked, edible portion. Main characteristics Different types of tables.

UNIT 17.- NUTRITIONAL LABELING Characteristics, interpretation and analysis of labeling from the nutritional point of view.

ITEM 18.- FEATURES OF FUNCTIONAL FOODS. Definition Brief history. Modifications with respect to their homologous foods in the market. Paper in a healthy diet.

UNIT 19.- FOOD BALANCING OF THE ADULTA SANA PERSON. Interpretation and evaluation of the recommendations. Healthy dieters. Qualitative food balance.

UNIT 20.- ALTERNATIVE FOOD. Type of vegetarian food. Nutrition considerations. Related food products.

UNIT 21.- FOOD GUARDS RECOMMENDED IN THE DIFFERENT STAGES AND PHYSIOLOGICAL SITUATIONS OF LIFE. Pregnancy, breastfeeding, menopause, early childhood, school, adolescence, sport and aging. Specific food products.

UNIT 22.- FOOD GUARANTEES RECOMMENDED IN THE PROBLEMS OF PUBLIC HEALTH AND PATHOLOGIES OF THE BEST PREVALENCE. Obesity, Hypertension, Dyslipidemia, Diabetes. Food products adapted to the different pathologies.

UNIT 23.- OTHER DISEASES WITH NUTRITIONAL IMPLICATIONS. Food allergies and intolerances, kidney diseases, bone diseases, digestive tract diseases, osteoporosis, eating disorders. Food products adapted to the different pathologies.

Methodology

Practical works

1. Intake evaluation (AI): Computer room. 1,5 hours.

2. Calculation of needs (NN): Computer room. 1,5 hours.

3. Computer programs (IP): Computer room. 3 hours.

4. Troubleshooting (RP); Computer room. 3 hours.

5. Nutrition Labeling (EN): Classroom. 3 hours.

6. Functional foods (AF); Classroom. 3 hours.

7. Light foods (AL): Classroom. 2 hours.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Practices in the computer room	9	0.36	1, 2, 17, 3, 19
Seminars	8	0.32	5, 7, 16, 14
Theoretical classes of foundations of human nutrition	18	0.72	1, 2, 17, 5, 6, 15, 8, 12, 13, 19
Theoretical classes of human nutrition	18	0.72	1, 2, 17, 7, 16, 9, 14, 19
Type: Autonomous			
Practical works of the subject	89	3.56	1, 2, 17, 18, 3, 4, 5, 6, 7, 15, 16, 9, 8, 12, 13, 10, 14, 11, 19

Assessment

The evaluation of the student will be based on the following distribution:

1.- Theoretical tests 60%

1.1.- Review of fundamentals of nutrition: 30%

1.2.- Applied nutrition test: 30%

2.- Practical tests 40%

2.1.- Assistance 10%

2.2.- Cases 30%

2.2.1- Oral presentation 5%

2.2.2-Fundamentals of nutrition 15%

2.2.3- Cases of applied nutrition 10%

NOTE: It is necessary to pass the theoretical exam to be able to pass the subject.

To carry out the assessment, two theoretical examinations will be done with test questions.

The practical tests will be derived from:

The continuous evaluation of the assistance to the practices.
Completion of the different cases (6) that will be presented during the semester:
Cases related to the 4 practical nutritional assessment sessions: The first will consist of evaluating the condition of the student's body condition with interest in nutrition. The second case will consist of the nutritional calculations necessary to determine the daily energy and nutrient needs for each student. The third case will consist of collecting all the foods consumed in one week, following a nutrition survey, leading to the preparation

of a medium diet. The fourth case will consist of the analysis of the obtained diet and the writing of the final conclusions.
The remaining two cases will be related to the practical sessions on specific foods. This will imply that each student will have to choose two kinds of type foods and develop them from the perspective of healthy eating at different stages of life.
Students who do not pass the subject should do a new theoretical recuperation exam or re-submit the unresolved cases. Once the subject is evaluated, each student will be indicated which is the part of the subject that is passed or which must be recovered, if necessary.

Students not present in any of the evaluations, will have to carry out a new theoretical examination of recovery or will return to present the cases not presented. This new evaluation will be at the same time as recovery assessments.

Students who do not participate in assessable activities that represent at least 50% of the total grade will be considered as Non-Valuable.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Applied theoretical evaluation of human nutrition	30% of the final grade	1.5	0.06	18, 5, 7, 16, 9, 8, 10, 14
Assessment of learning in the development of practical cases	10% of the final grade	1	0.04	1, 2, 3, 4, 19
Evaluation of nutritional status	15% of the final grade	2	0.08	1, 2, 17, 4, 11, 19
Food evaluation and nutritional strategies	15% of the final grade	2	0.08	1, 2, 17, 3, 9, 11, 19
Theoretical evaluation of the foundations of Human Nutrition	30% of the final grade	1.5	0.06	1, 5, 6, 7, 15, 16, 12, 13

Bibliography

ASTIASARAN I, MARTINEZ JA. (1999) *Alimentos: composición y propiedades*. Madrid: Mc Graw-Hill Interamericana de España.

CERVERA P, CLAPES J, RIGOLFAS R. (2004) *Alimentación y dietoterapia: nutrición aplicada en la salud y la enfermedad*. 4ª ed. Madrid: McGraw-Hill Interamericana en España.

DUPIN H et al. (1992) *La alimentación humana*. Barcelona: Bellaterra.

HERNANDEZ M, SASTRE A. (1999) *Tratado de Nutrición.* Madrid: Díaz de Santos.

IRA FOX, S. (2003). Fisiología humana. 7ª Edición. McGraw-Hill Interamericana. Madrid.

MAHAN, L.K. y ESCOTT-STUMP, S. (2004). Nutrición y dietoterapia de Krause. McGraw-Hill Interamericana. 9ª Edición. México.

MARTÍNEZ, J.A. (2001). Fundamentos teórico-prácticos de nutrición y dietética. McGraw-Hill Interamericana. Madrid.

MATAIX J. (2002) *Nutrición y Alimentación humana*. Madrid: ERGON.

MUÑOZ M, ARANCETA J, GARCÍA-JALÓN I (eds.) (1999). *Nutrición aplicada y dietoterapia*. Navarra: EUNSA.

PEMBERTON, C. (1993). Manual de dietética de la Clínica Mayo. Medici. Barcelona.

ROBINSON. (2001). Bioquímca y valor nutritivos de los alimentos. Acribia, S.A.. Zaragoza.

SALAS J, BONADA A, TRALLERO R, SALÓ M.E. (2000). *Nutrición y dietética clínica*. Barcelona: Masson.

Sociedad Española de Nutrición Comunitaria (2004). *Guía de la alimentación saludable*. Madrid: SENC.

Sociedad Española de Nutrición Comunitaria (2001). *Guías alimentarias para lapoblación española. Recomendaciones para una dieta saludable*. Madrid: IM&C, SA.

Food composition tables

FARRAN A, ZAMORA R, CERVERA P. *Tablas de composición de alimentos del CESNID - Taules de composició d'aliments del CESNID*. Barcelona: Edicions Universitat de Barcelona, 2003. 247p. ISBN 84-8338-457-4

FAVIER J-C, et al. *Répertoire général des aliments: Tables de composition = Composition tables*. 2è. Edition revue et augmentée. Paris: Technique & Documentation: INRA: Ciqual-Regal, cop. 1995. XXVII, 897p. ISBN 2-85206-921-0

McCANCE RA, WIDDOWSON E, HOLLNDE B. *The Composition of foods*. Cambridge (etc.): Royal Society of Chemistry: Ministry of Agriculture, Fisheries and Food, 1994. XI, 462 p. ISBN 0-85186-391-4

MATAIX J. *Tabla de composición de alimentos*. 4ª ed. Granada: Instituto de Nutrición y Tecnología de alimentos: Universidad de Granada, 2003

MINISTERIO DE SANIDAD Y CONSUMO. *Tablas de Composición de Alimentos Españoles*. Madrid: Ministerio de Sanidad y Consumo. Secretaría General Técnica. Centro de publicaciones. 1997

MOREIRAS O, et al. *Tablas de composición de alimentos*. 7ª ed. Madrid: Pirámide, 2003

SOUCI SW, FACHMANN W , KRAUT H. *Food composition and nutrition tables; Die zusammensetzung der lebensmittel nährwert-tabellen; la composition des aliments tableaux des valeurs nutritives*. 5th ed., rev. and completed. Medpharm: CRC Press, 1994.

VAN DEN BOOM A. *Comer bien. Guía práctica de la composición de los alimentos*. Madrid: Nuer Ediciones. 2000. 119p. ISBN 84-8068-065-2

Software

The Nutritics program of professional nutrition will be used, to know the composition of the different foods and to be able to develop the nutritional self-evaluation work.